

Proposed Remarks

The applicant submits that the above-presented amendments to the claims and the following remarks fully respond to each issue presented in the Office Action and that the claims are now in condition for allowance.

Claim Rejections – 35 USC § 112

The Office has rejected claims 51, 54, 58, 59 and 67 under the second paragraph of 35 USC 112 stating that the claims are indefinite. More specifically, the Office has presented the following basis for these rejections:

In claim 51, the office alleges that the limitation “the call” in line 4 is lacking an antecedent basis;

In claim 54, the Office alleges that the limitation “the call” in line 2 is lacking an antecedent basis;

In claim 58, the Office alleges that the limitation “the location in time and accuracy level” in line 2 is lacking an antecedent basis; and

In claim 59, the Office alleges that the limitation “the location in time and accuracy level” in lines 1-2 is lacking an antecedent basis.

Further, the Office has alleged that the limitation of “the operational stage” appearing at line 4 in claim 67 is lacking an antecedent basis.

The applicants have amended these claims, as well as the parent and interceding claims as necessary to overcome these rejections and to correct other antecedent issues that were discovered upon review of the claims.

Claim Rejections – 35 USC § 102

The Office has rejected claims 41, 48, 49, 52, 53, 56, 64 and 66 under 35 USC 102(a) as being anticipated by United States Patent 6,385,454 in the name of *Bahl* et al.

Of these claims, 41 and 53 are the only independent claims and the rejections of these claims are addressed first.

The prosecution history for this case is been rather intensive and involved. The applicants believe the main reason for the intensity of the prosecution is a few similarities

between the present invention and the cited art when viewed from a macro level.

However, the applicants are going to clearly articulate differences between the present invention as claimed, and the cited references on a micro level in this response. The applicants respectfully submit that once these differences are appreciated by the Office, that it will be clear that the present claims are allowable over the cited references.

Position 1: Use of physical geographically-defined accurate location. Claims 41 and 53 both recite gathering information about cellular network events and the location information at which these events occur. As amended, this “location information” has been more particularly described as a physical, geographically-defined, accurate location. In essence, the applicant is clearly limiting the claim by including the element of information that defines a geographic location at which a cellular network event, such as a handover, dropped call, etc. occurs. This is supported in the specification which describes using an accurate location determination system, such as a synchronized GPS system to obtain continuously accurate location information. Page 4, second paragraph. As those skilled in the art will appreciate, the synchronized GPS system provides a physical location by providing latitude and longitudinal information with accuracy level of less than 5 meters – which certainly is one example of a physical, geographically-defined, accurate location.

The applicants submit that (1) the Bahl reference simply does not describe, suggest or teach the element of collecting cellular network events along with a measurement of physical, geographically-defined location (2) that Bahl teaches away from such an element.

Bahl does not describe, suggest or teach measuring the element of a physical, geographically-defined location.

When Bahl mentions anything with regards to the location of a mobile unit, it is only addressing a logical location within a cellular network map relative to cell site theoretical boundaries.

Bahl specifically states that it employs the use of “location prediction” technology rather than the use of location tracking technology. There is absolutely no indication whatsoever in the entire Bahl reference of the measurement of an actual physical location.

Bahl teaches two types of location prediction in a hierarchical location prediction (HLP) method. A first type is local prediction or LP. Local prediction provides a best estimate of the next cell to be crossed based on the instantaneous trajectory of the mobile unit and the geometry of the cells in the network. This is not a physical, geographically-defined location. It is a logical location that can vary based on network topology, whether conditions, atmospheric conditions etc. Col. 11, lines 35-49.

The next type is global prediction or GP. Global prediction again focuses on a logical position that is relative to historical information known about a particular user when compared to current activity of that same user. The use of this historical data (described as UMPs in Bahl) is what is relied upon rather than a physical, geographically-defined location. As will be further described below, the use of this technology advantageously allows Bahl to operate without the use of location tracking technology for the purpose of his invention/application but, it lacks other capabilities that are provided by the present invention's reliance upon a physical, geographically-defined location, and are essential for this invention/application.

Thus, Bahl does not describe, suggest or teach a physical, geographically defined, accurate location and, explicitly states that its technology is geared towards eliminating the use or reliance upon such technology. Thus, **Bahl teaches away from identifying a physical, geographically-defined, accurate location.**

Position 2: Comparison against generic data. Claims 41 and 53 both recite the element of a step in which a drive is conducted with one or more mobile units to generate a database of cellular network events and physical, geographically-defined locations at which these events occurred. Subsequently, the location of a particular mobile unit is determined by comparing the occurrence of events with the events in the database. It is important to note that the mobile units used in generating the database are not the same mobile units whose location is being determined through the database.

Bahl uses historical data for a particular mobile unit to predict a logical location within the cellular footprint for that particular mobile unit. This is a necessary element in Bahl because Bahl does not describe the use of a physical, geographically-defined, accurate location. Rather, Bahl relies on the assumption that users typically have repeatable driving patterns. As such, Bahl teaches recording user mobility patterns

(UMP) of a user's historical activity. Then, for that same user or mobile unit, using handoff information, in comparison with the UMPs, to determine a logical route within the cellular footprint, which can then assist in optimizing future handoffs.

If a different user with different driving patterns using a mobile unit with the Bahl technology, the entire Bahl system can fail because the historical UMP will not apply to this different user. Likewise, if a user likes to “shake it up a bit” and take different routes or, simply does not have a predictable pattern of movement, then once again, the Bahl technology fails. All of these shortcomings in Bahl can be attributed to, at least in part, on the lack of obtaining a physical, geographically-defined location for a mobile unit at the time that cellular network events occur.

In contrast to Bahl, the present invention determines a physical, geographic location for a mobile unit based on generically generated cellular network event and location information – not user specific historical information. Bahl does not describe, suggest or teach the use of such generic data as *a sequence of cellular network events related to one or more mobile units*.

Position 3: No modifications to mobile units or cell system required. Claims 41 and 53 both recite the element of obtaining a new sequence of cellular network events extrinsically from the base stations or the controllers or main switching systems or communication links between them (claim 41) or simply from links between the switch and the base station controllers in a cellular network. The term “extrinsically” does not appear in the specification but is being included in the claim as a clear summary of what is described in the specification as monitoring the base station, base station controllers, main switching systems or links. Monitoring is an extrinsic process meaning that it can include observing, detecting, watching recording etc. but does not involve altering operation or intrinsically being involved.

This is a very different approach than what is described in Bahl. Bahl does not describe, suggest or teach monitoring the base station, controllers or main switching systems or communication links between them. In contrast, Bahl teaches a method and system that predicts the path of a Mobile Unit (MU). The prediction mechanism as detailed in Bahl is based on modifying the operation of the mobile unit. More specifically, the prediction is based on the mobile unit measurements of the signal strength from surrounding base stations

The intra-cell trajectory of the mobile unit is preferably derived from the strengths of the radio signals (RSS) from surrounding base stations (col. 4 lines 31-33) as measured at the MU (col. 4 line 7). In existing cellular systems, the distance between a mobile unit and a known base station is observable. This distance can be determined directly from the strength of the received signal, which is a known characteristic of the signal commonly called the received signal strength (RSS), measured in dB at the mobile station and performing the prediction based on this data. (col. 14, line 16-23)

Bahl does mention the possibility that the data monitored by the MU may be transferred to the BSC (base station controller) and the prediction can be performed there:

Moreover, to reduce signaling traffic, distribute computation load, and improve system security while still achieving location and speed prediction, the electronics for predicting the path of the mobile in keeping with the invention is preferably resident within the mobile rather than in the BSCs....”), (col. 18 line 5)

However, Bahl teaches that the measurements must be done by the MU as mentioned above, and further teaches a mechanism to transfer the data (either raw measurements or, preferably, prediction results) to the BSC and the MSC (mobile switching unit)

“The global prediction is delivered to the transceiver 21, which transmits the local or global prediction to the base station (BTS) by way of a conventional RF link 27. The BTS forwards the prediction to the mobile switching center (MSC) by way of the base station controller (BSC). The MSC uses the prediction to manage the allocation of the channel resources in the network in cooperation with the other MSCs....”) . (col. 8 line 4)

This of course requires modifications on the MU, BTS (base transceiver station), BSC and MSC.

The present invention is based on using only data that is available in the cellular network and collecting this data only from the BTS, BSC, MSC or communication lines between them, as claimed in claims 41 and 53. The present invention thus does not require collecting any data on the MU and consequently does not require modifications or additions to any component of the network, not the MU, nor the BTS, BSC or MSC as Bahl requires and teaches.

Position 4: Reading physical, geographically locations would destroy Bahl. The applicants further assert that if one tries to read the use of physical, geographic locations in Bahl, it would totally destroy the Bahl reference. There would be no more need for the UMP's generated in Bahl and there would be no need for the two-tiered hierarchical location prediction HLP. Further, in attempting to combine a reference that includes physical geographic locations with Bahl would also destroy Bahl. Bahl has no use for physical, geographic locations and is totally designed in a manner to eliminate such reliance.

Thus, the applicants respectfully submit for the afore stated reasons that claims 41 and 53 are allowable over the cited references.

Further, because each of the remaining claims 42-52 and 54-62 and 64-66 depend either directly or indirectly from claims 41 or 53, then these claims are also in condition for allowance.

Claim Rejections – 35 USC § 103

The Office has rejected claims 47, 50 and 57 under 35 USC 103(a) as being unpatentable over *Bahl* et al. in view of United States Patent 6,052,598 in the name of *Rudrapanta*.

Claims 47, 50 and 57 depend either directly or indirectly from an allowable base claim as presented above, and as such, are also in condition for allowance.

The Office has rejected claims 58 and 59 under 35 USC 103(a) as being unpatentable over *Bahl* et al. in view of *Rudrapanta*. as applied to claim 7 and further in view of United States Patent Publication Number 20060072501 in the name of Toshimitsu et al.

Claims 58 and 59 depend either directly or indirectly from an allowable base claim as presented above, and as such, are also in condition for allowance.

Allowable Subject Matter

The Office has indicated that claims 42-46 and 65 are objected to as being dependent upon a rejected base claim but, that they would be allowable if rewritten to incorporate the limitations of the intervening claims. The applicants appreciate the Offices position with regards to these claims but, based on the arguments and amendments

presented above, and the fact that these claims depend either directly or indirectly from an allowable parent claim, the applicants assert that these claims are also in condition for allowance and respectfully requests the Office's consideration.

The Office has indicated that claim 63 is allowed. This action by the Office is appreciated and no further amendments are presented with regards to claim 63.

Conclusion

If the Office has any questions or if there are any actions that can be handled through an Examiner's Amendment, the applicant requests the Office to contact the attorney of record using the below-provided contact information.

Respectfully submitted,

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